

WHAT IS CLAIMED IS:

1. A survey tool for use in a wellbore, the survey tool comprising:
  - a downhole portion having an axis, the downhole portion adapted to move within the wellbore with the axis generally parallel to the wellbore;
  - a first acceleration sensor mounted at a first position within the downhole portion, the first acceleration sensor adapted to generate a first signal indicative of an acceleration of the first acceleration sensor along the axis;
  - a second acceleration sensor mounted at a second position within the downhole portion, the second position being spaced from the first position by a non-zero distance along the axis, the second acceleration sensor adapted to generate a second signal indicative of an acceleration of the second acceleration sensor along the axis; and
  - a controller adapted to receive the first signal and the second signal and to calculate a depth, a velocity, or both a depth and a velocity of the downhole portion in response to the first signal and the second signal.
2. The survey tool of Claim 1, wherein the downhole portion is adapted to bend as the downhole portion moves through a curved portion of the wellbore, the axis bending to be parallel to the wellbore such that the axis at the first position is at a non-zero angle with respect to the axis at the second position.
3. The survey tool of Claim 1, wherein the downhole portion comprises a housing.
4. The survey tool of Claim 3, wherein the first acceleration sensor and the second acceleration sensor are positioned within the housing.
5. The survey tool of Claim 1, wherein the non-zero distance is larger than approximately 10 meters.
6. The survey tool of Claim 1, wherein the non-zero distance is in a range between approximately 10 meters and approximately 30 meters.
7. The survey tool of Claim 1, wherein the first acceleration sensor and the second acceleration sensor are substantially identical.

8. The survey tool of Claim 1, wherein the downhole portion further comprises at least one supplementary sensor, the supplementary sensor adapted to detect a landmark location of the wellbore.

9. The survey tool of Claim 8, wherein the at least one supplementary sensor comprises a gamma-ray sensor adapted to detect gamma rays from geological formations in proximity to the downhole portion.

10. The survey tool of Claim 8, wherein the wellbore comprises pipe casing sections joined by casing collars, and wherein the at least one supplementary sensor comprises a magnetic sensor adapted to detect casing collars in proximity to the downhole portion.

11. The survey tool of Claim 1, wherein the controller is adapted to provide real-time processing analysis of the first signal and the second signal.

12. The survey tool of Claim 1, wherein the controller is adapted to provide post-processing analysis of the first signal and the second signal.

13. A drilling assembly comprising the survey tool of Claim 1.

14. A logging assembly comprising the survey tool of Claim 1.

15. A method for determining a depth of a downhole portion of a survey tool along a wellbore, the method comprising:

providing a survey tool comprising a downhole portion, the downhole portion comprising a first acceleration sensor and a second acceleration sensor, the first acceleration sensor adapted to generate a first signal indicative of an acceleration of the first acceleration sensor along the wellbore, the second acceleration sensor adapted to generate a second signal indicative of an acceleration of the second acceleration sensor along the wellbore, the second acceleration sensor spaced from the first acceleration sensor by a non-zero distance;

receiving the first signal and the second signal while the downhole portion is at a first location within the wellbore;

receiving the first signal and the second signal while the downhole portion is at a second location within the wellbore; and

calculating a depth of the downhole portion of the survey tool in response to the first signal and the second signal received while the downhole portion is at the first location and in response to the first signal and the second signal received while the downhole portion is at the second location.

16. The method of Claim 16, wherein the downhole portion is stationary while at the first location.

17. The method of Claim 16, wherein the downhole portion is moving while at the first location.

18. The method of Claim 16, wherein the downhole portion is stationary while at the second location.

19. The method of Claim 16, wherein the downhole portion is moving while at the second location.

20. A method for determining a velocity of a downhole portion of a survey tool along a wellbore, the method comprising:

providing a survey tool comprising a downhole portion, the downhole portion comprising a first acceleration sensor and a second acceleration sensor, the first acceleration sensor adapted to generate a first signal indicative of an acceleration of the first acceleration sensor along the wellbore, the second acceleration sensor adapted to generate a second signal indicative of an acceleration of the second acceleration sensor along the wellbore, the second acceleration sensor spaced from the first acceleration sensor by a non-zero distance;

receiving the first signal and the second signal while the downhole portion is at a first location within the wellbore;

receiving the first signal and the second signal while the downhole portion is at a second location within the wellbore; and

calculating a velocity of the downhole portion of the survey tool in response to the first signal and the second signal received while the downhole portion is at the first location and in response to the first signal and the second signal received while the downhole portion is at the second location.